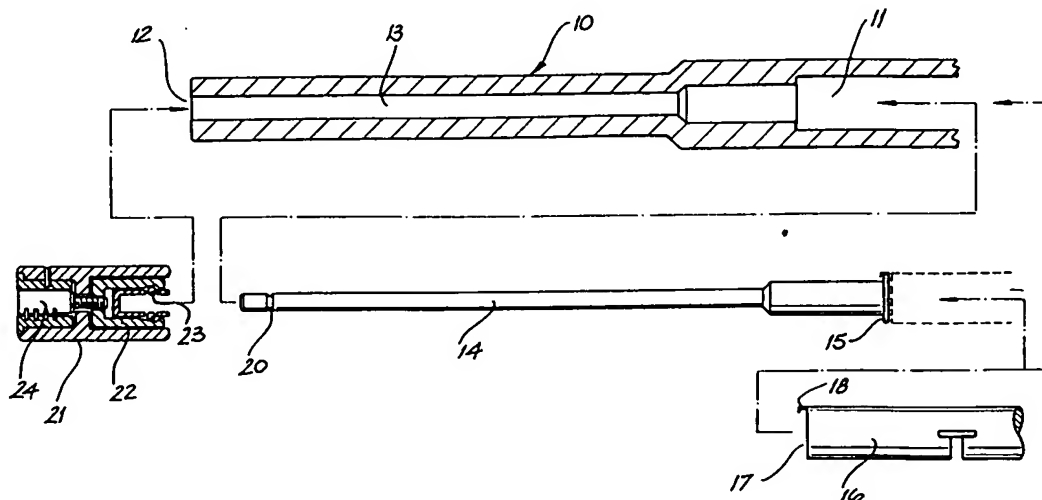


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(21) International Application Number: PCT/AU91/00465 (22) International Filing Date: 9 October 1991 (09.10.91) (30) Priority data: PK 2728 9 October 1990 (09.10.90) AU (71) Applicant (for all designated States except US): PIP INDUSTRIAL SERVICES PTY. LTD. [AU/AU]; 6/26 Tupia Street, Botany, NSW 2019 (AU). (72) Inventor; and (75) Inventor/Applicant (for US only) : BENKOVIC, Ivan [AU/AU]; 58 Malley Avenue, Clempton Park, NSW 2206 (AU). (74) Agent: F.B. RICE & CO; 28a Montague Street, Balmain, NSW 2041 (AU).		(81) Designated States: AT (European patent), AU, BE (European patent), BR, CA, CH (European patent), CS, DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, KP, KR, LK, LU (European patent), NL (European patent), SE (European patent), US. Published <i>With international search report.</i>

(54) Title: FIREARM LOCK



(57) Abstract

A gun lock including a hardened steel rod (14) threaded at each end, the threaded ends respectively engaging a cartridge shaped plug (27) and a rotatable tumbler lock (24). The lock (24) is fixed within a sleeve body (21) adapted to fit snugly around a barrel end (12) of a gun to be locked. The cartridge plug (27) fits snugly within the firing chamber (11) of the gun, in the same manner as a cartridge adapted to be fired within the gun. With the cartridge plug (27) within the firing chamber (11), and with the rod (14) threadedly engaged in the lock (24) the rod (14) can be inserted down the bore (13) of the gun and threadedly engaged to the cartridge plug (27) by rotating a mating key engaged in the lock (24), until the device is snug. Removal of the key results in securing the gun lock within the gun. A slot (26) within the sleeve body (21) engages an aiming sight (25) of the gun so as to prevent rotation of the sleeve (21). The end of rod (14), rather than being threaded, may include a circumferential groove which can be lockingly engaged by a set of wedge driven diametrically restricting detent balls, the wedge driving mechanism being threadedly driven by the lock (24) within an alternative arrangement of the sleeve body (21).

"FIREARM LOCK"

BACKGROUND TO THE INVENTION

This invention relates to a device which may be used to lock in an inoperative state a rifle, pistol or similar
5 firearm.

There is an ever growing pressure to limit the misuse of firearms in the general public. The lack of a secure, yet reasonably priced, gun lock, has to a large extent hampered serious efforts in addressing the problem.

10 In essence the present invention provides a gun lock which engages the end face of a gun bolt, or corresponding component in the normal manner by which the bolt engages the rear of a cartridge for the purposes of ejection of the cartridge.

15 SUMMARY OF THE INVENTION

Accordingly, in one broad form, the present invention may be said to consist in

a gun lock comprising:

an inextendible rod means sized to be inserted along
20 the bore of a gun barrel;

a first end member fixable to a first end of the rod means and being sized and shaped so as to reside in a firing chamber of the gun in the manner of a cartridge;

and a second end member lockably securable to a
25 second end or proximate portion of the rod means at a distance from the first end member approximately equal to the length of the bore such that with the rod means disposed within the bore, the first end member residing within the firing chamber and fixed to the rod means and
30 the second end member secured to the rod means, the first end member cannot be withdrawn from the firing chamber.

It is preferred that the rod means is a hardened metal rod and that the first end member is threadedly attached to said rod and is shaped to the same shape and
35 dimensions as a standard cartridge to be used in the gun intended to be locked by the gun lock.

SUBSTITUTE SHEET

The gun also includes a bolt, or similar cartridge loading/ejection device, 16. The bolt 16 is slidably held in the gun so that its front face 17 can be extended into, and reversed out of, the cartridge chamber 11. The front face 17 is forced firmly up behind a cartridge to be fired and locked in place before firing, and the ejection claw 18 grips the rim, or corresponding structure, of the fired cartridge so as to drag the cartridge rearwardly for ejection after firing. The ejection claw 18 is normally pivoted to the front face 17 but in the firing position it is locked firmly in place so as to ensure a firm reliable grip on the cartridge rim for the purpose of ejecting the cartridge after firing.

This general structure of the barrel 10 and bolt 16 are well known and will vary in detailed design from one gun to another. The structures are common in a large variety of guns ranging from side arms to naval guns.

The lock comprises a hardened steel rod 14 with a locking rim 15 integral of one end of the rod. The locking rim 15 is sized and shaped the same as the rim and cartridge end of a cartridge adapted to be fired by the gun intended to be locked. As seen in dotted outline the rim 15 is engaged by the bolt 16 by way of the ejection claw 18 engaging the rim 15 in the same manner as it engages the rim of a live cartridge.

The opposite end of the rod 14 includes a groove 20, the tip of the rod 14 being insertable into a lock body 21. By inserting a correct key into the actual lock 24, and by turning the key, an internally tapered barrel 22 is screwed down towards the rod 14 and diametrically compresses the caged locking balls 23. As the key is turned the lock body 21 is accurately positioned, by feeling resistance in the key, so that the locking balls 23 move into the reduced section of groove 20. Upon removing of the key the lock is then

engaged with the rod 14. In order to lock the gun the disassembled rod 14 is inserted, following the arrow, in through the cartridge chamber 11 and along the bore 13. Before the rim 15 fully enters the barrel the ejection
5 claw 18 is engaged with the rim 15. The rod 14 is then fully inserted by inserting the bolt 16 to the usual firing position.

The tip of the rod 14 with the groove 20 is slightly exposed outside the end 12 of the barrel. The lock body 21
10 is then locked to the rod 14 in the manner described above, the key removed, and the gun made secure and inoperative.

In this locked state the locking device cannot be removed, nor in fact the bolt removed, without damaging at
15 least some component of the gun which will leave the gun inoperative.

To unlock the gun, the reverse procedure is followed. One clear advantage of this locking device is that it renders the gun inoperative even when the gun is being
20 transported. Additionally, by providing a secure fitting to the lock body 21, or by providing a rigid member through which the gun barrel 10 can be inserted but through which the lock body 21 will not pass, the secured gun can additionally be locked in a fixed safe or other
25 secure location.

The gun shown in Fig. 2 includes a barrel 10, cartridge chamber 11, barrel end 12 and bore 13, generally as described above, but is in the typical form of a revolver. Proximate the barrel end 12 is a sight 25.

30 The gun lock itself includes three separable components, a sleeve body 21, a rod 14, and a cartridge end 27. The rod 14 is of hardened steel and is threaded at both ends. At one end of the rod 14 the thread engages a corresponding thread within the cartridge end 27 while
35 the thread on the other end of the rod 14 engages a

corresponding thread within the rotatable centre of the lock 24. The lock 24 is a proprietary item including a central tumbler and a surrounding sleeve, the sleeve being pinned or screwed in a fixed relationship within the sleeve body 21. Thus by inserting an appropriate key the lock 24 can be rotated in an appropriate direction to either screw or unscrew the rod 14.

The cartridge end 27 is externally shaped substantially the same as a cartridge which could be fired in the gun and therefore fits snugly within the firing chamber 11.

The lock of Fig. 2 is installed by threading rod 14 into the lock 24, by placing the cartridge end 27 in the firing chamber 11 that is aligned with the bore 13, and by inserting the rod 14 down the bore 13 so as to engage the cartridge end 27. With the key inserted into the lock 24, the lock 24 is turned in the direction to threadedly engage the rod 14 with the cartridge end 27, until rotating resistance becomes firm, the lock can then be rotated back sufficiently to withdraw the key, leaving the gun securely locked. In this position the sleeve 21 will have been placed over and partially along the barrel end 12 with a slotted portion 26 of the sleeve 21 fitting around the sight 25. This then prevents the rotation of the sleeve 21 relative to the barrel 10, and in the absence of a suitable key it therefore prevents rod 14 from being unscrewed from the cartridge end 27.

The rod 14 might be engaged within lock 24 by an alternative means, or the threaded engagement between the rod 14 and the lock 24 might be temporarily fixed by a thread locking solution.

To unlock the gun, the reverse procedure is followed.

In both cases it will be appreciated that the portion of the lock occupying the firing chamber 11, that is the cartridge end 27 (Fig. 2) and the enlarged end of rod 14

CLAIMS:-

1. a gun lock comprising:
an inextendible rod means sized to be inserted along
the bore of a gun barrel;
5 a first end member fixable to a first end of the rod
means and being sized and shaped so as to reside in a
firing chamber of the gun in the manner of a cartridge;
and a second end member lockably securable to a
second end or proximate portion of the rod means at a
10 distance from the first end member approximately equal to
the length of the bore such that with the rod means
disposed within the bore, the first end member residing
within the firing chamber and fixed to the rod means and
the second end member secured to the rod means, the first
15 end member cannot be withdrawn from the firing chamber.
2. A lock as in claim 1 wherein said rod means is a
hardened metal rod and said first end member is threadedly
attached to said rod and is shaped to correspond to the
shape and dimension of a standard cartridge to be used in
20 a pre-selected gun intended to be locked by said gun lock.
3. A lock as in claim 2 wherein the second end member is
securable to the second end of the rod by rotation of a
lock means.
4. A lock as in claim 3 wherein both the first and
25 second ends of the rod are threaded and engage respective
corresponding threads within said respective first and
second end members, said first end member being rotatable
within a sleeve, and lockably fixed within the sleeve, and
said sleeve having a counter bore size so as to fit snugly
30 about a free end of the barrel of said gun.
5. A lock as in claim 1 wherein the first end of the rod
means includes a circumferential groove, and the first end
member includes a sleeve having a bore sized and shaped to
fit snugly around an end of a gun barrel, internal wedge
35 driven constricting locking means sized and positioned so

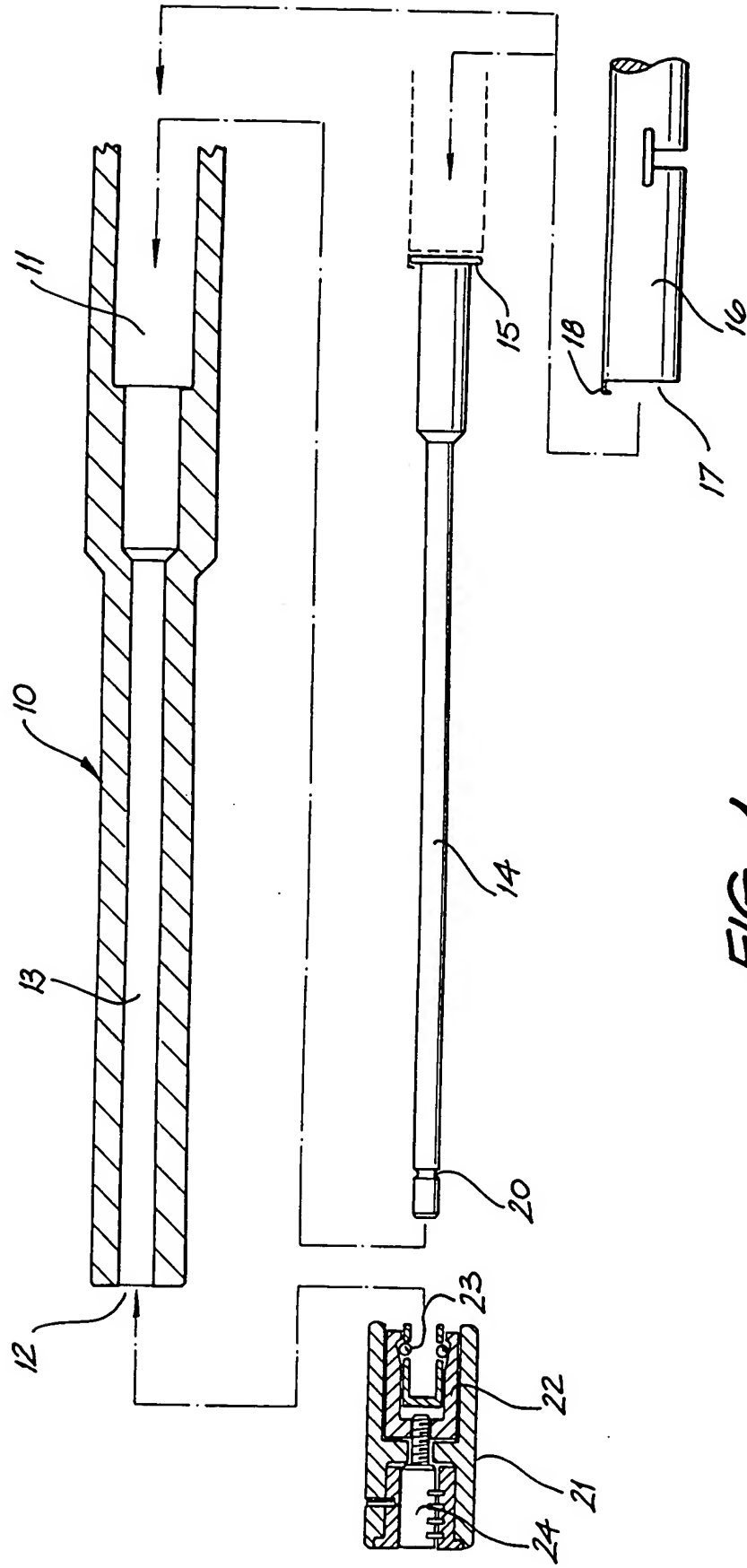


FIG. 1

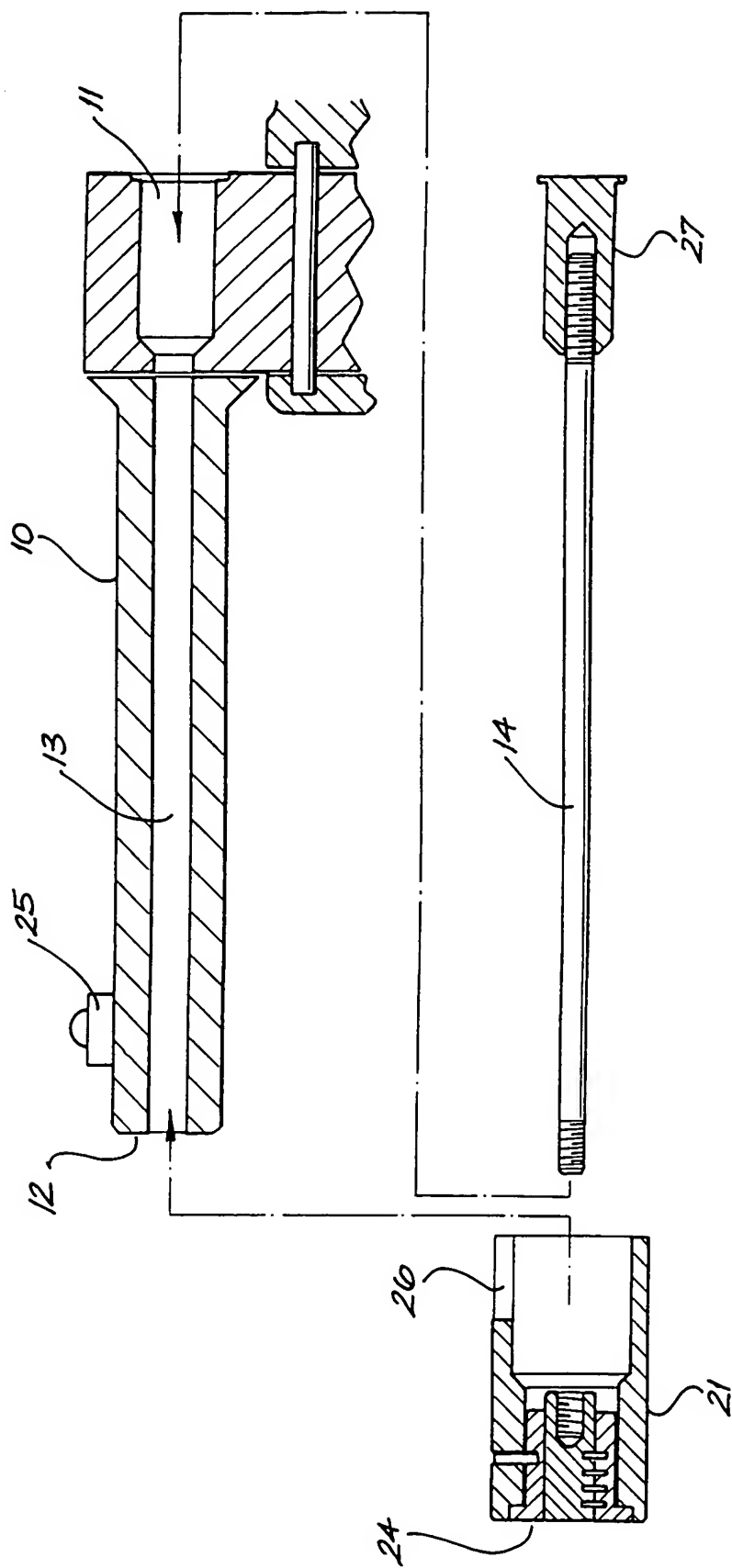


FIG. 2

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all)⁶

According to International Patent classification (IPC) or to both National Classification and IPC
Int. Cl.⁸ F41A 17/02, 17/44

II. FIELDS SEARCHED

Minimum Documentation Searched ⁷

Classification System

Classification Symbols

IPC
Int Cl⁵ F41A 17/02, 17/44, 17/00
Int Cl⁴ F41C 17/08

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched ⁸

AU : IPC as above; Australian Classification 89.3

III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹

Category [*]	Citation of Document, ¹¹ with indication, where appropriate of the relevant passages ¹²	Relevant to Claim No ¹³
X Y	US,A, 2887807 (SANTANGELO) 26 May 1959 (26.05.59) See figures 1,2,3 & 5, column 1 line 64 to column 3 line 29	(1-4,7) (5-7)
X Y	US,A, 2479107 (GARRETSON) 16 August 1949 (16.08.49) See figures 1-3, column 1 line 44 to column 2 line 47	(1-4,7) (5-7)
X Y	GB,A, 2082293 (OWEN et al) 3 March 1982 (03.03.82) See Abstract, page 1 lines 52-56, page 1 line 124 to page 2 line 1, figures 1 & 2	(1-2,5,6) (5,6)
X Y	US,A, 2327334 (PARKER) 17 August 1943 (17.08.43) See figures 1-6, column 1 line 45 to column 2 line 46	(1-4) (7)
	(continued)	

* Special categories of cited documents : ¹⁰

"T"

Later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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document member of the same patent family

"A" Document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

IV. CERTIFICATION

Date of the Actual Completion of the International Search
29 November 1991 (29.11.91)

Date of Mailing of this International Search Report

12 December 1991

International Searching Authority

Signature of Authorized Officer

AUSTRALIAN PATENT OFFICE

E.N. PERRIS

**ANNEX TO THE INTERNATIONAL SEARCH REPORT ON
INTERNATIONAL APPLICATION NO. PCT/AU 91/00465**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member
US	4023294	CA 1065656